REMARKS

Claims 1-4, 6-9 and 11-14 were pending in the application, and were each rejected.

Various claims have been amended as set forth herein to address the Examiner's concerns, and to address changes to statutory-subject-matter caselaw that have occurred since the instant claims were drafted. Entry is respectfully requested as these amendments are believed to simplify issues for appeal.

Claims 5, 10, and 15 have been previously canceled.

Claims 1-4, 6-9, and 11-14 remain pending in this application.

Reconsideration of the claims is respectfully requested.

CLAIM REJECTION UNDER 35 U.S.C. § 112, second paragraph

Claims 1-4, 6-9. and 11-14 were rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter. The Applicant has amended the independent Claims as shown above.

There are two separate requirements under 35 U.S.C. § 112, second paragraph. MPEP § 2171, (8th ed., rev. 8, August 2010). The first is subjective and requires that the claims must set forth the subject matter that the *Applicants* regard as their invention. *Id.* The second is objective and requires that the claims must particularly point out and distinctively define the metes and bounds of the subject matter that will be protected by the patent grant (*i.e.*, whether the scope of

the claim is clear to one of ordinary skill in the art). *Id.* The Examiner should explain whether the rejection is based on indefiniteness or on the failure to claim what the Applicants regard as their invention. *Id. (citing Ex parte Ionescu*, 222 U.S.P.Q. 537, 539 (Bd. App. 1984)).

Applicant believes that the aspects discussed by the Examiner were clear and definite to those of skill in the art before amendment. The Examiner's concern appears to be that while valency and connectivity patterns of the nodes are specifically claimed, there was no specific language stating that the "plurality of nodes" in the model were connected (though this would certainly be understood by those of skill in the art). To accommodate the Examiner, the independent claims have been amended to specify that the model has a plurality of interconnected nodes, as illustrated in the Figures. If the Examiner has other concerns, the undersigned would welcome a telephone call to resolve them.

Other amendments are made with regard to the other issues discussed below, and these are also believed to address the Examiner's concerns.

Accordingly, the Applicant respectfully requests the Examiner to withdraw the § 112 rejection.

CLAIM REJECTION UNDER 35 U.S.C. §101

Claims 1-15 were rejected as drawn to non-statutory subject matter.

The only issue raised in this rejection is whether the claim is directed to an "abstract idea". Under the current Office Guidelines regarding *Bilski*, it is clear that the data processing system of

claim 6 and the computer readable medium of claim 11 cannot be considered "abstract ideas", and so the rejection is clearly inappropriate.

Claim 1 is amended to specify that the mesh of the model is smoothed at the selected node, and the model is stored in a data processing system. This is clearly a "practical application", not an "abstract idea". The rejections are believed obviated or traversed.

Applicant also makes other amendments to the claims to conform them to current Office practice. Again, should the Examiner have other suggestions as to how the claims could be improved, the undersigned would be happy to discuss them.

Accordingly, the Applicants respectfully request the Examiner to withdraw the statutory subject matter rejection.

CLAIM REJECTION UNDER 35 U.S.C. §102

Claims 1-4, 6-9, and 11-14 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,315,537 to *Blacker*, hereinafter "Blacker". This rejection is respectfully traversed.

A prior art reference anticipates the claimed invention under 35 U.S.C. § 102 only if every element of a claimed invention is identically shown in that single reference, arranged as they are in the claims. MPEP § 2131, (8th ed., rev. 8, August 2010) (*citing In re Bond*, 910 F.2d 831, 832, 15 U.S.P.Q.2d 1566, 1567 (Fed. Cir. 1990)). Anticipation is only shown where each and every limitation of the claimed invention is found in a single prior art reference. *Id.* (*citing Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987)).

Claim 1 requires loading, in a data processing system, a model having a plurality of nodes. The Examiner cites Blacker col. 6, lines 32-44:

> As illustrated in FIG. 3, the paving technique begins by inputting a boundary at step 100 of one or more ordered and closed loops of connected nodes. FIG. 12(A) illustrates the initial loops as the permanent boundary of the region. The connectivity and location of nodes on the permanent boundaries are not allowed to change during paving so that mesh compatibility is ensured with adjacent regions The permanent boundaries of the regions are either exterior or interior boundaries. Only one exterior permanent boundary exists for a region that must be a loop of nodes that is nonintersecting and completely encloses the region to be meshed.

Claim 1 also requires receiving a selection of a node of the model. The Examiner cites to col. 12, lines 30-34:

> The paving boundary smooth step 131 is a modified isoparametric smooth that is limited to nodes on the current paving boundary that are not part of the permanent boundary. As discussed above, the permanent boundary nodes are never free to move.

As can be seen, nothing in this passage teaches or suggests a selection of a node of the model, or that a selection is received by anything. As such, Blacker does not meet the limitations of the claims.

The final Office Action responds that "any node of the nodes may be selected for smoothing." *Final Office Action, page 9.* Whether a node "may be" selected is not relevant to this anticipation rejection; the reference must teach *actually selecting* a node of the model. It does not.

The final Office Action further responds by reference to col. 12, lines 49-42. The relevant portion of this column discloses:

> 749-756. Defining V_i as a vector from the origin to a node N_i and assuming that N_i is attached to n elements, V_{mj}, V_{mk} and V_{ml} are vectors from the origin to nodes N_j, N_k and N_l of the m^{th} element, respectively. The nodes must be in a clockwise or counterclockwise order around the element. A new vector V'_i from the origin to the proposed new location of the node N_i is given by the equation:
>
> $$V_i = \frac{1}{n} \sum_{m=1}^{n} V_{mj} + V_{ml} - V_{mk} \qquad [19]$$
>
> Δ_A which defines the change in location of the node N_i for a true isoparametric smooth is given by the equation:
>
> $$\Delta_A = V_i' - V_i \qquad [20]$$

While this paragraph indicates that a node N_i exists, nothing can be said to be selecting this node for anything, and in particular does not teach *receiving a selection* of a node, as required by the claim.

Claim 1 also requires determining a nodal valency of the selected node. The Examiner references Figure 12(b) for this point. Figures 12(A)-12(D) illustrate iteratively forming rows, as shown:

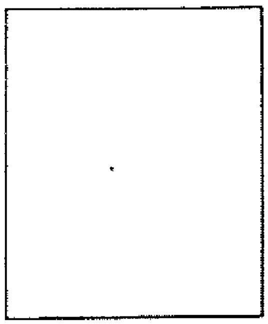
FIG. 12(a)

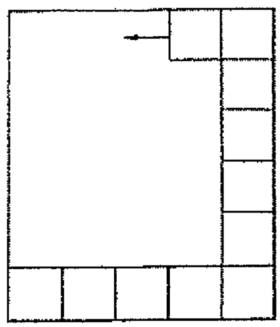
FIG. 12(b)

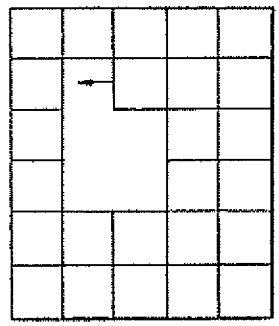
FIG. 12(c)

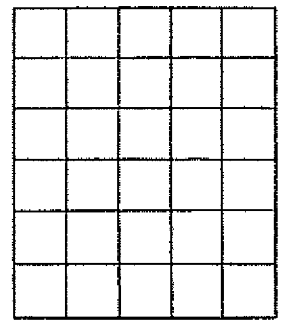
FIG. 12(d)

The description of these figures is found in col. 6, lines 14-31:

> The finite element analysis uses the generated quadrilateral mesh representation of the geometric region as illustrated in FIGS. 12(A)-12(D).
> After inputting the data for the geometric region into the data base, an all quadrilateral mesh is automatically generated by the paving technique of the present invention without decomposing the geometric region. The paving technique is accomplished by iteratively paving the geometric region with rows of quadrilateral elements from the exterior boundaries toward the interior of the geometric region. The paving technique includes an interdependent series of steps as illustrated in FIG. 3. FIGS. 12(A)-12(D) illustrate iteratively paving rows of quadrilateral elements toward the interior of the geometric region until the region is eventually filled with the quadrilateral elements The interdependent series of steps in the paving technique includes choosing a row, closure checking, row generation, smoothing, seaming, row adjusting, intersecting and cleaning up which will be described below in more detail

As can be seen, nothing at all in these figures, the accompanying description, or anything else in Blacker teaches or suggests determining the nodal valency of any node. As such, Blacker cannot anticipate the claims.

The final Office Action responds that "the nodal valency and the element connectivity pattern of any selected node in the model can be determined from the figure", referring to these Figures 12(A)-12(D). *Final Office Action, page 9.* Again, what "can be" determined from a figure doesn't meet the claim limitations – the art must show that the valence is *actually determined* for a selected node. Blacker doesn't receive a selection of a node, and doesn't determine valency for a selected node.

The final Office Action also responds that the portion of col. 12 reproduced above describes "assuming that N_i is attached to n elements". *Final Office Action, page 9.* This *assumption* of Blacker does not describe *determining* the valency of a selected node.

Claim 1 also requires determining an element connectivity pattern of the selected node. The Examiner again simply refers to Figure 12(b). While the relevant passages describe rows of quadrilateral elements, nothing in Blacker teaches or suggests determining an element connectivity pattern of the selected node, as claims. As such, Blacker cannot anticipate the claims.

Similarly, the final Office Action argues that because Blacker generates a quadrilateral mesh, a node connectivity pattern "can be determined". *Final Office Action, page 9.* In fact, no connectivity pattern for a selected node is determined by Blacker's system.

Claim 1 also requires performing a smoothing operation on the selected node according to the nodal valency and the element connectivity pattern. As Blacker does not teach or suggest determining nodal valency or element connectivity patterns, any smoothing performed by

Blacker is not done according to the nodal valency and the element connectivity pattern, as claimed.

As such, Blacker cannot anticipate the claims.

All independent claims have similar limitations not taught or suggested by the art of reference, and so all claims distinguish over all cited art. All rejections are traversed.

Accordingly, the Applicant respectfully requests the Examiner to withdraw the § 102 rejection with respect to these claims.

CONCLUSION

As a result of the foregoing, all remaining claims in the Application are in condition for allowance. Applicant respectfully requests that this Application be passed to issue.

If any issues arise, or if the Examiner has any suggestions for expediting allowance of this Application, the Applicant respectfully invites the Examiner to contact the undersigned at the telephone number indicated below or at ***manderson@munckcarter.com***.

The Commissioner is hereby authorized to charge any additional fees connected with this communication or credit any overpayment to Deposit Account No. 50-0208.

Respectfully submitted,

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Date: 10/15/10

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